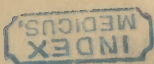


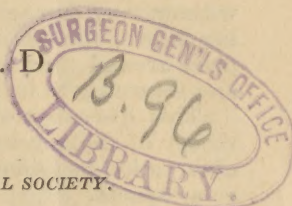
HUGHES (C.H.)



# REFLEX CEREBRAL HYPERÆMIA

BY

C. H. HUGHES, M. D.



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READ BEFORE THE SAINT LOUIS MEDICAL SOCIETY.  
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The best and most complete text-book on nervous diseases that has yet appeared, according to one of the best English critics on neurology,<sup>1</sup> gives but indistinct prominence to this form of cerebral disease, by casually noting that "generally women suffer with it at the menstrual period, or when there is a retarded flux;" and approvingly quoting the two divisions (and a blended third one) made of cerebral congestion by Dr. Milner Fothergill, who has within the past year written so perspicaciously for *Brain* on the neurosal and reflex disorders of the heart; one of which, in contradistinction from that of cerebral tissue alterations, attracting the blood in abnormal quantities to the brain, is the purely "vascular form with increased blood pressure, dependent on extra cranial agencies."

The skepticism of Trousseau, in regard to hyperæmia-cerebri, is not shared by Hammond, who reports having observed in his "private practice in the city of New York, during a period of five years up to 1870, 622 cases;" and in such an exceptionally large experience in so short a time, notes *en passant* among the causes "the irritation of worms in the intestinal canal or irritation existing in other portions of the system," but though he makes more forms of cerebral hyperæmia than those of any other author, he makes no distinct classification of this form of the disease.

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<sup>1</sup> Dr. Crichton Brown's criticism on Allen McLane Hamilton's new Book on Disease of the Nervous System, in *Brain*, Oct., 1878.

Trousseau's opinion, that cerebral congestion is not a common complaint, not only finds no confirmation in later observations, but a distinct, emphatic and overwhelming refutation; and in these latter days of intellectual and emotional excitation, and of gangliopathic disturbance external to the brain, a wider area must be allowed for morbid causative influence, reflexly determining inter-cranial states, and especially such as causes within the cranium vascular disturbances. The intricate and wonderful arrangement of the perivascular space, about all the vessels of the brain, enables the latter to expand to a very great extent, without any damaging pressure being made upon the surrounding tissue, the perivascular fluid being driven from its normal place around the vessels, at the time of the vascular distension, and returning to its place when the hyperæmia subsides.

This discovery of Robin and Hiss, has exploded the *plenum* theory of the cerebral circulation, as pathological and clinical observation had done before they had demonstrated the perivascular spaces.

From my note-book for the last two years, the first case is that of Jacob Schoene, read before the Association of Medical Superintendents of American Insane Asylums and reported in the *Journal of Mental and Nervous Diseases* in 1877, who suffered from unilateral abscess and tumors of the cerebellum; all of whose symptoms were the result of irritation extended to the cerebrum. The irritation involved the vaso-motor system within the brain. In Schoene's case the head symptoms all disappeared upon the adoption of a plan of treatment addressed with the end in view of removing the hyperæmia of the brain. Now, there was nothing in that case to excite the suspicion, except the intense occipital pain, that the disease had localized in the cerebellum. The man died, as I suppose, of rupture of the brain, since the abscess was near the surface and found to be partly empty when he died. This man, who at one time staggered about the streets, and was unable to walk without the assistance of others, recovered from all these symptoms upon the adoption of a plan of treatment, not addressed to the cerebellum, but to the cerebrum, or rather to the circulation within the encephalon.

Then the case of Mrs. R., whose cerebral symptoms made their appearance at the time of menstruation, not from a *suppression* of menstruation, but from the *excitation*; because her menstruation was always copious and full, and prolonged for a period of never less than five days. Another case occurred, in a lady with psychical symptoms, connected with intense cerebral congestion at the time of menstruation. In this case there was no suppression of menstruation; nor was impairment discovered in the menstrual flux, either in kind or quantity. It is not an uncommon thing in cases of menstrual suppression, to have as a morbid result congestion of the brain; but where menstruation



is performed normally, it is unusual. Then, there is the case of a gentleman in Colorado, whose hyperæmia was due to and connected with continuous nocturnal emissions, and a constant state of irritation of the genito-urinary apparatus; and another, of a gentleman of North St. Louis, whose hyperæmia was due, so far as could be traced, to the constant habit of masturbation. Now, in these cases, masturbation is given as a common cause. Even Lallamand, many years since, spoke of masturbation as a common cause of cerebral vascular fullness; but he never undertook to explain how it was brought about.

But the most interesting case that ever occurred in my experience, happened a year or two ago, when I was lecturing at the St. Louis Medical College, in the person of one of the medical students. The case has served to "point a moral and adorn a tale" in my experience. It serves to show how vigorously a man may be mistaken in the treatment of a case, and how vigorously also, he may address his efforts to the wrong end. This was a case of cerebral hyperæmia, and of course the treatment was addressed to the brain. There were no symptoms of enteric disturbance in the case. There were no evidences that I could discover of eccentric irritation; and full doses of bromides and ethereal lotions, whilst alleviating temporarily the condition of the young man, signally failed to remove the trouble. When, in the progress of treatment, he informed me he had passed a portion of a tape-worm, I then discovered the source of all his troubles; and when he got rid of his tape-worm, his hyperæmia vanished with it. There were no symptoms of tape-worm discoverable in the case, and of course it was not thought of, but I have never treated a case of cerebral hyperæmia since, without trying to find out if there was any tape-worm there also.

Another case observed in my experience last year, was one arising from the same cause, in the person of a gentleman living on Olive Street, and it was in that case indubitably reflex. Another case happened in the person of a gentleman solely from indigestion—an old gentleman seventy-two years of age. There was no arterial degeneracy discoverable; the man was able to walk from his residence out on Washington and Leffingwell avenues, where he boarded; able to walk from there to my office, without riding on the cars, although abundantly able pecuniarily to ride. Hyperæmia was always traceable to his indigestion, and this has increased upon him. He has removed to Chicago; and it has increased upon him, so that he is in danger on many occasions, of falling down; he is in imminent danger of becoming paralytic. The trouble is in the stomach; there is always fullness and slowness of the pulse, and a labored action of the heart. He has been also unconscious on one or two occasions. His was not a case of simple stomachic vertigo.

Cerebral hyperæmia is not uncommonly associated with suppression of menstruation. One of the first cases that ever came

under my observation, to thoroughly satisfy myself, occurred in the person of a young lady in St. Charles, who inherited a neuropathic diathesis, a tendency to insanity, or to unstable action of the brain and nervous system.

She was brought to the asylum at Fulton. One day whilst at the seminary, and when perfectly rational, her menstruation was suppressed, and before morning her brain was congested and she was perfectly insane. It was not a violent form of insanity, but a case of acute delirious mania, with a disposition to be in constant motion. Her insanity displayed itself in constantly calling the chickens, regardless of time or place.

This form of hyperæmia of the brain, occasioned by suppressions of menstruation, I have witnessed, I suppose, a hundred times; but it is not usual to find cerebral hyperæmia at the time of the menstrual flow, if the flow is normal in quantity and kind.

This subject of reflex cerebral congestion, is a subject that has interested me a good deal; possibly it may interest others.

I am very well satisfied that reflex cerebral irritation is much more common than we have been inclined to regard it; that reflex forms of insanity, depending upon hyperæmic states of the brain, are also much more common than we are inclined to think. I believe that a fair proportion of mental diseases in connection with cerebral hyperæmia, are due to primary morbid conditions elsewhere than in the brain, especially where there exists an inherent insane diathesis, or inborn tendency to take on an abnormal psychical action from slightly eccentric excited causes.

DR. NEWMAN:—Mr. President, if I rightly understand Dr. Hughes, I must dissent from his views in one particular. If he designed to state that these reflex phenomena always result from a hyperæmic condition of the brain, I disagree with him. That such is the fact *generally*, I am willing to admit; but we see frequently this reflex phenomena manifested in opposite states of the brain as well as in the general system. Some of the worst cases of nocturnal emissions that have come into my hands have resulted from this condition and prostration of the system. If the genital organs are feeble, and frequent emissions take place without erections, we should not say that they issue from a hyperæmic condition of the brain.

DR. HUGHES said:—Dr. Newman has misunderstood me in regard to morbid conditions of the brain, other than those of hyperæmia. My remarks were confined to *hyperæmic* conditions altogether; particularly those cases of reflex irritation implicating the brain so as to engender hyperæmic cerebral states. Of course there are many conditions of cerebral disturbance that may be the result of eccentric irritation, not accompanied with vascular congestion. Irritation of the vaso-motor nervous system precedes the vascular dilatation. As a matter of course, the vascular dilatation is a secondary result; the irritation is pri-



mary. It is, first, reflex irritation, and afterwards vascular dilatation. I would not like to be understood as attributing even the majority of cases of cerebral disease to reflex hyperæmia, but simply as noting the fact that a great many cases of cerebral irritation, involving serious consequences in the end, have their origin in morbid conditions external to the brain, reflected through the sympathetic nervous system upon the latter, and that these cases are not unfrequently associated with persons who inherit the neuropathic diathesis—the insane neurosis,—the inborn tendency to take on morbid conditions of the brain, upon slighter causes than usually act on the average individual. Among these are persons who become hyperæmic in the brain from slight eccentric irritation. You may have, as every physician knows, conditions of irritation that are not at all connected with cerebral hyperæmia. In children, during the period of dentition, there may be, or there may not be, hyperæmia. You may have irritation in children, resulting in convulsions, that are not the necessary result of cerebral hyperæmia. A child may be anæmic in its brain, and yet be convulsed. Hydrocephalus is not hyperæmia.

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## A MEDICAL BRIEF ON RESERVE FORCE.

[Read before the St. Louis Medical Society, June, 1879.]

All animals have a reserve force, or fund of nervous energy, evolved, in the laboratory of system, from the food, drink and air they obtain, and stored away in the tissues as latent vital power, upon which, in the emergency of a failure of the customary food supply, they may draw for a time after they cease to eat or drink, for continued sustenance, and upon which, for a very short time even, they may draw after they cease to breathe.

In man, the period for which reserve vital power is ordinarily provided is about nine days, as shown in instances of starvation at sea, etc., etc., and in cases of sickness, where both food and drink have been persistently rejected by the stomach or refused by the patient.

When water is taken into the system, even though food is not, man may survive much longer than this, as has probably been demonstrated to the satisfaction of us all by the experience of the sick room, and as is often shown in the persistent refusal of food by the insane, when means are not at hand, as in asylums, for enforcing proper alimentation.

If a human being should live longer than ten days without either food or water it would be rather, but not entirely, exceptional.

The most recent authenticated instance of fasting for a longer period than nine days, in a human subject, that has come to my knowledge, is that of the case related in the *London Lancet* for November, 1878, by Surgeon MacLaughlin, of the Inman line steamer City of Chester, which also re appears in the *Boston Medical and Surgical Journal* for February 20th, last. Dr. MacLaughlin's case secreted himself in the hold of the vessel at Liverpool, and had nothing to eat or drink during the whole voyage to New York, from September 24th to October 4th, but two handfuls of salt which he found in the hold, and his own urine, which he passed in a flask he had with him and drank each time he voided it. When the vessel reached New York he was found greatly emaciated, insensible, cold and nearly pulseless, but rallied and was convalescent after five days.

An instance was last winter related to me, by a gentleman of veracity, of a hog surviving after being three weeks imprisoned under a house by the snow, though, when first taken out, the ani-



mal was so weak he could not stand. Such instances of persistent vitality in the hog, under such circumstances, are not rare; but the following instance is much more remarkable—the animal having been without food for forty-nine days, and still lives: “Mr. Charles S. Tarleton, of Lafayette county, while making preparations to kill his hogs on December 11th, the day before the big snow, let one of them escape. At that time it was thought the hog would weigh about 275 pounds. After the lapse of forty-six days, when getting out straw with which to cover ice, Mr. Tarleton discovered the hog under the stack, and from all appearances it had not moved during the entire time. The snow was undisturbed, as was also the straw about him, and the hog must have remained almost in one position from the time it was snowed under until it was released as above stated. The hog seemed to be in good health, was remarkably strong considering the circumstances, and ate heartily, but was exceedingly thin, not weighing, perhaps, more than 100 pounds.”

I wrote to Mr. Tarleton respecting the authenticity of the above, and received from him the appended letter:

LEXINGTON, Mo., March 1, 1879.

DR. C. H. HUGHES:

DEAR SIR:—Your postal is at hand. The hog story is authentic, with the exception that the hog did not eat or drink for three or four days after it was taken out of the straw. That it was under the straw forty-six days, I am prepared to prove by good men. It would have weighed 250 to 275; when taken out, from 100 to 110. The hog is at this time doing well, and bids fair to make a good hog *again*. Yours truly, CHAS. S. TARLETON.

In this connection it is interesting to recall the phenomena of disintegration during the process of starvation. The fat first almost entirely disappears; then the blood glands and viscera waste away, and finally the nervous system succumbs. The formative forces or force forming portions of the body give out first—the *vis a tergo*. The *vis a fronte* fails last,—the energy displaying powers of the organism, whose life is the blood, whose power of manifesting life is in the brain and nerves, being the last to succumb, reserve power ceasing to be created some time before it ceases to be displayed.

With these and other recorded facts before us it may readily be conceived how, under certain conditions of apparently suspended animation, in consequence of some occult neuropathic condition, allied probably to hysteria or catalepsia, where the normal disintegrating processes have not been accelerated by mental anxiety and the consequent disintegration connected with the struggle for existence, in view of conscious impending death, as would take place in a person having a desire for food but involuntarily starved, life might be prolonged to a much greater length than the average possible duration, especially if water were not withheld.

In some of those reported cases of delicate, inactive and hysterical females, where life is said to have been prolonged far beyond the average period without food, if it could be ascertained that no hysterical deception had been practiced, the lowered vitality, existence persisting, is a greater mystery than food deprivation. But since it is the province of medicine to confront the mysterious with scientific explanation, the probable solution is in the lowered disintegration diminishing the demand for nutrition.

Cases like Miss Faucher may not always be deception, since the utmost possible limit of vital resistance, without a new supply of food in man, has not been discovered with absolute certainty.

Medical men in the country may contribute to the solution of this question by carefully observing instances like the above, since it is hardly probable that the inherent vital power in a perfectly healthy man is not less than that of such inferior animals as the hog.

Since this brief paper was written, Dr. Chas. W. Stevens, of this city, has communicated to me the case of a man who for fifty-three days refused everything but water, under the dominion of a delusion.\* It is my opinion that the more this subject is looked into the more will be found to sustain the view that, when food-deprivation is entirely self-imposed and voluntary, general disintegration reduced to a very low degree, and no disease existing, save possibly just sufficient in the cerebral cortex to induce the morbid display of volition with reference to alimentation, life may be prolonged, by the necessarily very moderate daily demand on the reserve force of the system, to a much longer period than we have been generally willing to concede possible.

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\* Reuben Kelsey, fifty-three days without food, taking not over a pint of water daily, reported in 1825, by Dr. James McNaughton, Professor of Anatomy, University of New York.